USSR

UDC: 532.526

SHAKHOV, V. G.

"Turbulent Boundary Layer on a Slipping Wing of Infinite Span"

Tr. Kuybyshev. aviats. in-t (Works of the Kuybyshev Aviation Institute), 1971, vyp. 35, pp 110-116 (from RZh-Mekhanika, No 9, Sep 72, Abstract No 9B829)

Translation: The paper presents an approximate integral method of calculating a turbulent boundary layer in an incompressible fluid on a slipping wing. Closure of the integral relations for impulses is accomplished by using the Prandtl formula relating the tangential stress to the transverse velocity gradient and generalized to the three-dimensional case. The profiles of tangential stress along the chord and the span of the wing are approximated by polynomials of the dimensionless transverse coordinate. It is shown that the drag law for a three-dimensional boundary layer on a slipping wing can be transformed to the corresponding relation for the two-dimensional case. The calculation of the surface friction at an angle of slip of 35° for linear distribution of the velocity of the external flow along the chord is compared with analogous results found on the basis of

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SHAKHOV, V. G., Tr. Kuybyshev. aviats. in-t, 1971, vyp. 35, pp 110-116

the Cumpsty-Head method (N. A. Cumpsty, M. R. Head, Aeronaut. Quart., 1967, 18, No 1, pp 55-84, RZh-Mekh, 1967, 10B88). It is noted that the proposed method gives an underestimated value of the coordinate of the point of detachment as compared with the Cumpsty-Head method. Bibliography of 10 titles. A. V. Kolesnikov.

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UDC: 532.517.4

USSR

FILIPPOV, G. V., SHAKHOV, V. G.

"Turbulent Flow Induced by Rotation of Two Coaxial Cylinders"

Tr. Kuybyshev. aviats. in-t (Works of the Kuybyshev Aviation Institute), 1971, vyp. 35, pp 89-92 (from RZh-Mekhanika, No 9, Sep 72, Abstract No 9B1113)

Translation: A comparison is drawn between calculations of the characteristics of turbulent flow between two rotating cylinders in accordance with two hypotheses on the relation between turbulent friction stresses and averaged flow velocities: on the preservation of Prandtl momentum (first hypothesis) and on conservation of the moment of momentum ("second") which is analytically represented in the form: $|\tau|/\rho = (\varepsilon/r)\partial(rv)/\partial r$, where τ is the friction stress, v is the averaged peripheral velocity, r is the distance from the axis of the cylinders, ρ is the density of the liquid, ε is the kinematic (turbulent) coefficient of viscosity which varies as a function of distance from the wall.

For the case where the inner cylinder rotates while the outer cylinder is stationary, equations are derived using the "second" hypothesis which

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FILIPPOV, G. V., SHAKHOV, V. G., Tr. Kuybyshev. aviats. in-t, 1971, vyp. 35, pp 89-92

determine the distribution of velocities and drag law, and which are compared with analogous equations derived in accordance with the "first" hypothesis. In the case of Couette flow (when r_1 and $r_2 \to \infty$, where r_1 and r_2 are the radii of the inner and outer cylinders), the computational formulas derived on the basis of the "first" and "second" hypotheses coincide completely. If the radius of the outer cylinder is finite, then the "second" hypothesis leads to simpler computational expressions for the drag law and the velocity profile; the discrepancy between the drag in accordance with both hypotheses and experimental data is no more than 5%. The velocity profile and drag found by means of the "second" hypothesis are not applicable to calculation of flow induced by rotation of a cylinder in an unbounded space. Bibliography of 5 titles. B. M. Yegupov.

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USSR UDC 532.526

SHAKHOV, V. G.

"Turbulent Boundary Layer of a Compressible Fluid on a Sliding Plate of Infinite Dimensions"

Tr. Kuybyshev. aviats. in-t (Works of Kuybyshev Aviation Institute), 1970, No. 45, pp 346-351 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6B753)

Translation: The nonhomogeneous flow of a gas over a sliding plate with a turbulent boundary layer is considered. The average velocity profiles and the resistance law are found. The local and total coefficients of friction of the plate are given for different values of the Mach number ($M < 10$) and different values of the angle of slide. Ye. L. Tarunin.

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UDC 532.526:532.517.4:536

SHAKHOV, V. G.

"On the Turbulent Boundary Layer of a Compressible Fluid at Rotating Bodies"

Tr. Kuybyshev. aviats. in-t (Works of Kuybyshev Aviation Institute), 1970, No. 45, pp 344-346 (from RZh-Aviatsionnyye i raketnyye dvigateli, No 5, May 72, Abstract No 5.34.15)

Translation: Sh. T. Chou and A. N. Tifford previously obtained one particular integral of the energy equation for a laminar boundary layer at rotating bodies for a Prandtl number equal to unity and under the assumption of the thickness of the boundary layer was small in comparison with the radius of curvature of the rotating body. A similar integral was obtained in this paper for a turbulent regime under the same assumptions, only both Prandtl numbers (the molecular and molar) were assumed equal to unity. 2 ref. Resume.

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UDC 539.374

USSR

SHAKHOV, V. I.

"Stability of Nonlinearly Deformable Elastic-Plastic Rods"

Tashkent, V sb. Seysmostoikost' zdaniy i sooruzh. (Earthquake-proofness of Buildings and Structures -- Collection of Works), 1970, pp 318-330 (from RZh-Mekhanika, No 10, Oct 70, Abstract No 10 V364)

Translation: This article contains a study of the quasistatic process of loading a rod under a conservative compressive load. The loads acting on the system are considered small. The strains with finite displacements are also considered small. When analyzing the stability, it is proposed that the apparatus of qualitative methods proposed by Poincare be used. The generalized Hancky model -- a multidisc rigid-plastic system -- was selected as the rod calculation scheme. The calculations were performed on the Ural-4 digital computer for the case of a rod with hinged ends. The relation between the stress and strain in the section of actively monotonically increasing stress is taken as cubic.

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SHAKHOV, V. I., V sb. Seysmostoikost' zdaniy i sooruzh, 1970, pp 318-330

The relation in the section of stress variation under unloading conditions was recorded by means of the Mazing principle. Graphs are presented for the relation between the compressive load and maximum deflection for various ratios of the longitudinal and transverse forces. The region of exhaustion of strength is isolated, and, accordingly, the conclusion is drawn that in the presence of discontinuous buckling, rupture of the rod takes place. It is noted that under large effect of the transverse load the problem of strength and not stability become decisive.

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USSR
ENGINEERING
Aeronautical and Space

USSR UDC 533.6.011.8

SHAKHOV, Ye. M.

"Transverse Flow About a Plate by a Rarefied Gas Flow"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 6, Nov-Dec 72, pp 107-113

Abstract: A method of characteristics is developed for the numerical solution of kinetic equations in the case of stabilized plane-parellel gas movements. The problem of flow about a plate situated normally to the supersonic mainstream is solved for a proximate equation, which approximates the Boltzmann equation, in accordance with an iteration method developed by the author. This method is a general, universal method for the numerical solution of two-dimensional problems for proximate kinetic equations. The calculation results are in satisfactory agreement with the available experimental data.

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USSR

UDC 612.8:797.215

SHAKHOVA, V. I., and MITRONOVA, I. A., Department of Physiology of Higher Nervous Activity at the Institute of Physiology imeni O. O. Bogomolets, Academy of Sciences Ukrainian SSR, Kiev

"Effect of Physical Load on the State of Human Higher Nervous Activity Under Conditions of Underwater Work"

Kiev, Fiziolohichnyy Zhurnal, Vol 19, No 4, Jul/Aug 73, pp 541-542

Translation: Human underwater work results in nervous-emotional tension and is reflected by higher nervous activity.

We studied eight amateur sportsmen 21-23 years old, all members of an underwater swimming team.

The following methods were used: 1) determination of the mobility indexes of nerve processes and work capacity of the brain according to A. E. Khil'chenko[1]; 2) correction test (Anfimov tables); 3) determination of the latent period of simple optical-motor reflex.

During the experiment the subjects performed the following tasks: 1) lifting bar-bells on dry land for 3 min; 2) free swimming for 20 min;

1. Higher nervous activity, 1958, VIII, 6.

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SHAKHOVA, V. I., and MITRONOVA, I. A., Fiziolohichnyy Zhurnal, Vol 19, No 4, Jul/Aug 73, pp 541-542

3) free swimming under water equipped with aqua-lung at a depth of 5 m for 20 min; 4) bar-bell lifting under water; 5) underwater exercise with an expander at a depth of 5 m; 6) free swimming and bar-bell lifting underwater at a depth of 14 m.

The indexes were noted prior to and after the performance of each task, using all methods.

It is known that any response of an organism to the influence of outer environment is individualistic, that it depends on the characteristics of the organism and most of all on the state and peculiarities of the nervous system. Considering this, prior to the analysis of experimental data, we report the properties of the nervous processes studied for their strength and mobility.

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SHAKHOVA, V. I., and MITRONOVA, I. A., Fiziolohichnyy Zhurnal, Vol 19, No 4, Jul/Aug 73, pp 541-542

Characteristics of the nervous processes studied for their strength and mobility

No.	Subjects	Indexes of the mobility of nervous processes according to Khil'chenko (number of stimuli per min) I signal system	II signal system	Force (work capacity) of the nervous system according to Khil'-chenko (% errors)	Estimate of the nervous system force	Average latent period of optical motor reflex (in μsec)
1.	K.	145	120	2%	Strong	195
2.	B.	170	130	3.5	Strong	188
3.	M.	140	--	3.5	Strong	131
4.	I.	110				190
5.	T.	160	125	5.5	Medium	191
6.	A.	150	115	6.0	Medium	188
7.	Z.	140	110	6.6	Medium	163
8.	S.	130	110	8.5	Weak	191

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SHAKHOVA, V. I., and MITRONOVA, I. A., Fiziolohichnyy Zhurnal, Vol 19, No 4, Jul/Aug 73, pp 541-542

Experimental results have shown that the proposed tests did not have the same effect on the central nervous system of individual sportsmen. The execution of the first three quite simple tests, which were not heavily demanding on the nervous system resulted in improved work of the subjects by all proposed methods. In a control test, using the Khil'chenko method, the number of errors dropped on the average from 15 to 12. The number of symbols reviewed according to the correction tables increased on the average by 40 symbols per 4 min. The latent period of optical-motor reflex was shortened on the average by 5 μsec.

Because the changes noted after the first three tasks in the subjects were all in the same direction, it was possible to carry out a statistical analysis of the summary data obtained in the experiments with the first three tasks. Treatment of the results obtained from the Khil'chenko method by the Student test showed a decrease in the number of errors in the performance following these tasks to be statistically valid with $p < 0.01$.

The data obtained point out a positive effect of the first, second and third tasks on the state of the nervous system. A decrease in the number of errors committed during the work on the Khil'chenko apparatus

SHAKHOVA, V. I., and MITRONOVA, I. A., Fiziolohichnyy Zhurnal, Vol 19, No 4, Jul/Aug 73, pp 541-542

and increased work productivity according to the correction method indicate an intensified tone of the cortex.

The currently observed relative increase in the error reactions towards a differential stimulus (according to Khil'chenko method) and a shorter latent period of the optical-motor reflex indicate an increased stimulation process.

The third task, however, led to a less significant increase in the indexes of work capacity and mobility of the nerve processes.

Inasmuch as in the first two tests these improvements may be explained by the positive effect of a moderate physical load, with submersion these effects are counterbalanced by the negative influence on the nervous system due to the depth effects (increased pressure, increased heat loss, hypoxia, etc.).

Different results were obtained in performing the fourth, fifth and sixth tasks which were more complex both from the physical and psychological aspects. In this case individual differences among the subjects were quite noticeable.

Sportsman K., with a strong nervous system and good mobility of nervous processes, showed improvements along all proposed tasks: a drop in error

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SHAKHOVA, V. I., and MITRONOVA, I. A., Fiziolohichnyy Zhurnal, Vol 19, No 4, Jul/Aug 73, pp 541-542

reactions according to the Khil'chenko method on the average by two errors (14 before -- 12 after the load), increased work productivity according to the correction test on the average by 12 symbols in 4 min, shortened latent period of motor reflex on the average by 12 μsec.

The subjects with an average nervous system activity (subjects T. and A.) showed in some cases poorer results by some methods. For example, the performance of subject T. by the correction method dropped from 1525 symbols before the test to 1470 after the test. The latent period of the motor reflex was shortened in one case by 70 usec, but prolonged in another by 12 μsec. The work capacity according to the Khil'chenko method improved somewhat (20 before the test and 18 after).

In case of the subject A. the latent period of the motor reflex after the load became shorter in some cases (on the average by 10 μsec) and increased considerably in others (by 74 μsec); according to the Khil'chenko method, in some cases there was no change noticed (21 errors before and 21 after the test), in other cases improvements were noticed (19 errors before, 12 after the experiments).

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It should be noted that the instability of the reactions noticed with this subject was also noted in simplier experiments and they increased with increasing complexity).

Subject S., with a weak nervous system, exhibited poorer results by all methods.

According to the Khil'chenko method the number of errors increased from 14 to 17. The latent period increased on the average by 20 μsec. The number of symbols scanned according to the correction test dropped from 1535 to 1500.

These results pointed out the role of the nervous system in the loads used.

However, the physical development factor is just as important. Subject B., with unique characteristics of the nervous system but poorly developed physical condition, showed deterioration of all registered indexes after the fourth and fifth tasks. The number of errors according to the Khil'chenko method increased from 7 to 11. The latent period of the motor reaction increased on the average from 170 to 213 microseconds, the work capacity according to the correction method became worse -- 1600 symbols with three

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SHAKHOVA, V. I., and MITRONOVA, I. A., Fiziolohichnyy Zhurnal, Vol 19, No 4, Jul/Aug 73, pp 541-542

errors before the load, 1770 symbols with 10 errors after the load. The negative results obtained may obviously be explained by the poor physical state of subject B. The physical load, normal for other subjects, was too difficult for him, requiring considerable physical and nervous stress. However, submersion to 14 m. showed no significant changes in subject B.

The work capacity according to the Khil'chenko and according to the correction method showed practically no changes (5 errors before the load, 5 after; 1800 symbols before the load, 1800 after). The latent period of motor reaction became somewhat shorter (from 224 μsec to 220 μsec).

Summarizing the results obtained we can conclude that the proposed tests showed no significant changes in the central nervous system of the examined subjects with strong balanced nervous systems and good physical development.

Subjects with a weaker nervous system or poor physical development showed considerable changes. Therefore, for physical loads connected with underwater performance, obviously only balanced individuals with good physical development and strong nervous systems should be used.

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USSR

SHAMKO, V. V., Nikolayev

"Trotyl Equivalent of a Powerful Underwater Spark Discharge"

Kishinev, Elektronnaya obrabotka materialov, No 5 (47), 1972, pp 16-19

Abstract: A comparison was made between the effect of a powerful underwater spark discharge on variation of all of its parameters within a broad range and the explosion of a chemical explosive. This comparison was made in terms of the pressure amplitude of the shock waves. The channel energy balance equation and empirical formulas for the power amplitude and channel radius were used to obtain the relation of the maximum channel pressure directly to the parameters of the generator and the medium. Relations were derived for the shock wave amplitude as a function of the generator and medium parameters. Comparison of the pressure amplitude of a spherical shock wave from a trotyl explosion and a powerful underwater spark discharge demonstrated that the energy similarity between them exists only for discharges for which only the initial voltage is varied or the magnitude of $\ell^{4/3}/L^{4/3}C^{2/3}$ is retained [ℓ is the length of the channel, L and C are the inductance and capacitance of the circuit respectively] inasmuch as the coefficient introduced into the discharge energy turned out to be proportional to this magnitude. Thus, an underwater spark discharge can

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SHAMKO, V. V., Elektronnaya obrabotka materialov, No 5 (47), 1972, pp 16-19

correspond with respect to power to a set of various explosives the equivalent weight of which is defined according to $G_{equiv} = \zeta E_d/Q$ where Q is the specific energy of the explosive charge, ζ is the energy equivalent, E_d is the discharge energy. The value of ζ can vary within broad limits and frequently assumes values greater than one. The use of powerful underwater spark discharges in technological processes is frequently more advantageous in energy respects than the application of a chemical explosion.

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USSR

UDC 632.951:2.07

KOZLOVA, T. F., SHAKHOVA, G. B., BELUGIN, V. E., ZHELONKIN, V. G., and SEDOV, N. V.

"Synthesis of the Koral Insecticide"

Moscow, Khimicheskaya Promyshlennost', No 6, 1971, pp 29-30 (429-430)

Abstract: Koral -- 0,0-diethyl-3(3-chloro-4-methylcoumaryl-7)thiophosphate is an insecticide of low toxicity in respect to cattle, when applied externally. The synthesis of this material consists of four steps; preparation of 0,0-diethylchlorothiophosphate (I) by the reaction of thiotrichlorophosphorus with ethanol; synthesis of α-chloroacetoacetate from acetoacetate and sulfuryl chloride followed by condensation with resorcinol to yield 3-chloro-7-hydroxy-4-methylcoumarine (II) and finally condensation of (I) with (II) by refluxing their mixture in acetone containing potassium carbonate. Koral is a white powder, m.p. 92-92.5°C. It is practically insoluble in water, slightly soluble in alcohols, and hydrocarbons, dissolves well in ketones.

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UDC 517.917

USSR

SHAKHOVA, L. V.

"On Limit Cycles of One Differential Equation"

Tr. Samarkand. un-ta (Works of Samarkand University), 1970, No. 181, pp 95-107 (from RZh-Matematika, No 4, Apr 71, Abstract No 4B208)

Translation: Coefficient criteria are established for the appearance or disappearance of limit cycles for the equation

$$\frac{dy}{dx}=\frac{a(x-\alpha)(x-\beta)+b(y-\gamma)(y-\delta)+cxy-a\alpha\beta}{xy},$$

where $a\alpha\beta=b\gamma\delta$, $\alpha<\beta$, $\gamma<\delta$.

Authors abstract.

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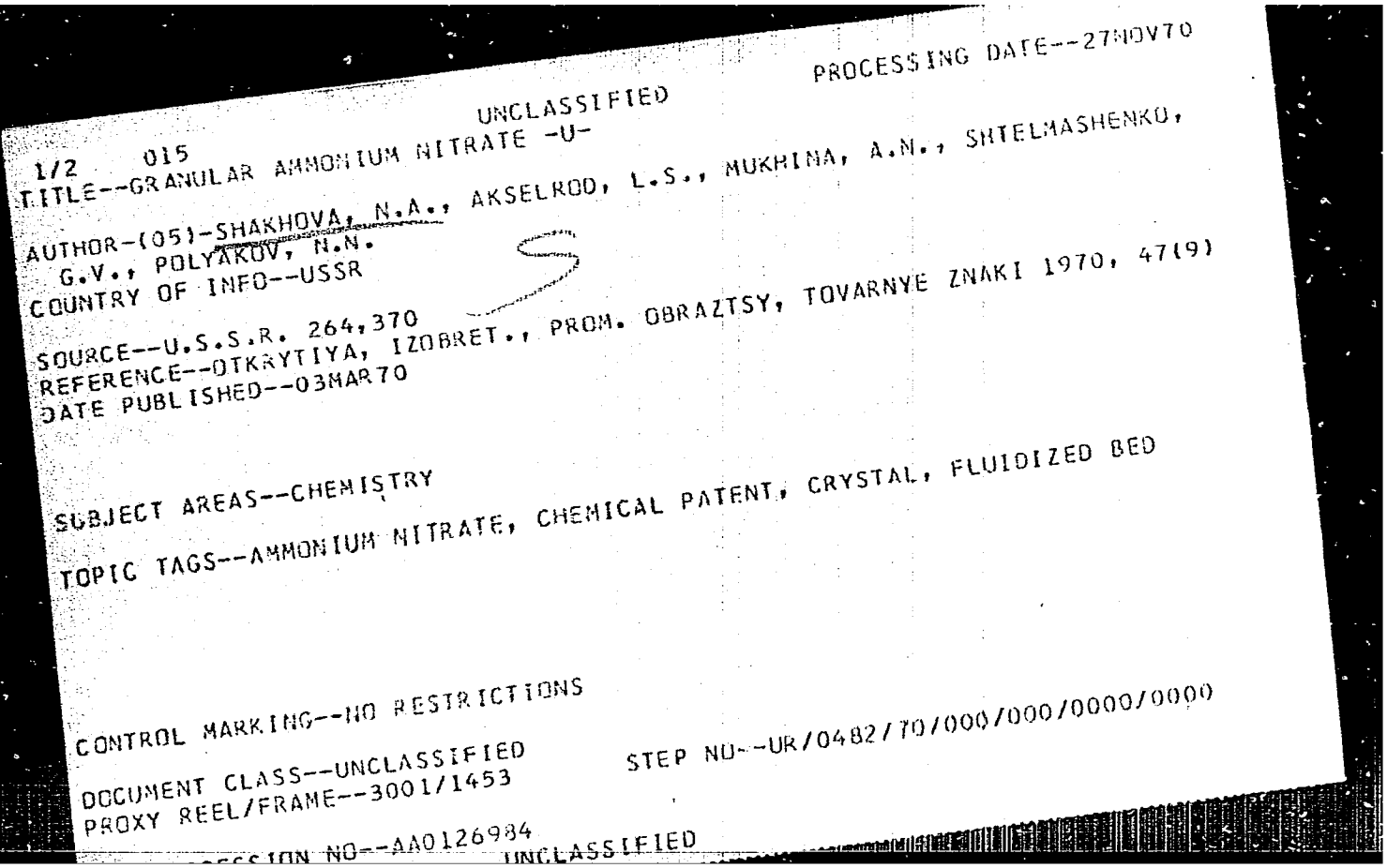

UNCLASSIFIED PROCESSING DATE--27NOV70

1/2 015

TITLE--GRANULAR AMMONIUM NITRATE -U-

AUTHOR-(05)-SHAKHOVA, N.A., AKSELROD, L.S., MUKHINA, A.N., SHTELMASHENKO, G.V., POLYAKOV, N.N.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,370

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(9)

DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMMONIUM NITRATE, CHEMICAL PATENT, CRYSTAL, FLUIDIZED BED

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED STEP NO--UR/0482/70/000/000/0000/0000

PROXY REEL/FRAME--3001/1453

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 015
CIRC ACCESSION NO--AA0126984
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POROUS NH SUB4 NO SUB3 CRYSTALS ARE PREPD. BY DELIVERING AN 80-5PERCENT CONCD. NH SUB4 NO SUB3 SOLN. INTO A FLUIDIZED BED AT 85-95DEGREES.

UNCLASSIFIED

Acc. Nr.: AP0029502 Ref. Code: UR 0391

PRIMARY SOURCE: Gigiyena Truda i Professional'nyye Zabolevaniya, 1970, Nr 1, pp 31-34

WORK CONDITIONS AND THE STATE OF HEALTH OF WORKERS ENGAGED IN HOT VULCANIZATION OF FOOTWEAR RUBBER

Z. A. Volkova, L. Ye. Milkov, K. A. Lopukhova, L. M. Malyar, Yu. L. Makarenko, T. K. Shakhova

Summary

Hot vulcanization (cure) of rubber with divinyl-styrene raw rubber serving as a base is attended by the formation of a complex steam and gas mixture. In this process permanent constituents are styrene fumes, whose content in the respiration zone comprises 2—40 mg/m³. Into the atmosphere there are also released divinyl, butyricaerosol, formaldehyde, acrolein, carbon monoxide, sulfudioxide, ammonia, methyl alcohol, aromatic amines. Heat-producing microclimate is an adverse factor as well. The workers demonstrated functional shifts in the state of the nervous system, alterations in the upper respiratory tract, peripheral blood and teguments. Medico-prophylactic measures are proposed.

1/1 REEL/FRAME 1968103

1/2 006 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--GENERAL CHARACTERISTICS OF PI PRIME NEGATIVE NUCLEON INTERACTIONS AT 60 GEV-C OBTAINED IN NUCLEAR EMULSION -U-

AUTHOR-(03)-ANZON, E.V., CHASNIKOV, I.YA., SHAKHOVA, TS.I.

S

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETT.; 31B: 237-40(16 FEB 1970)

DATE PUBLISHED--16FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PION, NUCLEON INTERACTION, NUCLEAR EMULSION, PARTICLE PRODUCTION, MESON INTERACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1982/0679 STEP NO--NE/0000/70/031/000/0237/0240

CIRC ACCESSION NO--AP0052138

UNCLASSIFIED

2/2 006 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0052138

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTERACTIONS OF 60 GEV-C PHI PRIME NEGATIVE MESONS WITH NUCLEONS OF THE NUCLEAR EMULSION WERE STUDIED. AVERAGE PRONG NUMBER IN PI PRIME NEGATIVE PROTON COLLISIONS IS 6.64 PLUS OR MINUS 0.16. THE MAJORITY OF SECONDARY PARTICLES ARE EMITTED INTO THE FORWARD HEMISPHERE IN THE PI PRIME NEGATIVE PROTON CM SYSTEM ESPECIALLY IN LOW MULTIPLICITY EVENTS. FACILITY: INST. OF NUCLEAR PHYSICS, ALMA-ATA, USSR.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--REDUCTION OF A HAFNIUM MOLYBDENUM HETEROPOLY ACID BY VARIOUS REDUCING AGENTS DURING THE PHOTOMETRIC DETERMINATION OF HAFNIUM -U-

AUTHOR-(04)-SHAKHOVA, Z.F., SEMENOVSKAYA, YE.N., SOKOVIKOVA, N.K., KOVALCHUK, V.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 490-4

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--HAFNIUM, MOLYBDENUM, SPECTROPHOTOMETRIC ANALYSIS, METAL CHEMICAL ANALYSIS, CHEMICAL REDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0479 STEP NO--UR/0075/70/025/003/0490/0494

CIRC ACCESSION NO--AP0126231

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126231

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONDITIONS FOR THE REDN. OF HG-MO HETROPOLYACID (I) BY ASCORBIC ACID, SNCL SUB2 AND STANNOUS OXALATE, A MO(V) SALT SCLN., AND METALLIC MO WERE STUDIED SPECTROPHOTOMETRICALLY. ALL THE REDUCING AGENTS REDUCE I GIVING IDENTICAL REDN. PRODUCTS; THEIR ABSORBANCE MAX. IS AT 720-40 NM. SN (II) OXALATE IS THE BEST REDUCING AGENT. AFTER 2 HR THE REDN. IS COMPLETE. A DIRECT DEPENDANCE EXISTS BETWEEN THE ABSORBANCE AND HF CONCN. IN THE 80 MUG HG-ML RANGE, WHICH CAN BE USED FOR HF DETN. AS ITS REDUCED I COMPLEX. CONDITIONS FOR THE EXTN. OF REDUCED I WERE FOUND. BUOH, ISOAMYL ALC., MECOET, AND THEIR MIXTS. WHICH C SUB6 H SUB6 EXT. I AND ITS SALTS FROM ACIDIFIED AQ. SOLNS; ALCS, EXT. I FROM 0.7N SCLNS., BUT KETONES AND THE MIXTS. NEED MORE ACID SCLNS. A METHOD WAS SUGGESTED FOR THE DETN. OF HG IN PURE SOLNS. BY USING SN OXALATE AS REDUCING AGENT IN AN AQ. AND AN EXTN. METHOD (MOLAR ABSORPTIVITY EQUALS 6.7 TIMES 10 PRIME3 AND 7.7 TIMES 10 PRIME3, RESP.). FACILITY: MOSCOW STATE UNIV., MOSCOW, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--SPECTROPHOTOMETRIC STUDY OF A HAFNIUM MOLYBDENUM HETEROPOLY ACID -U-

AUTHOR-(03)-SHAKHOVA, Z.F., SEMENOVSKAYA, YE.N., SOKOVIKOVA, N.K.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 485-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HAFNIUM COMPOUND, MOLYBDENUM COMPOUND, SPECTROPHOTOMETRIC ANALYSIS, ABSORPTION SPECTRUM, METAL COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1049 STEP NO--UR/0075/70/025/003/0485/0489

CIRC ACCESSION NO--AP0123042

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123042

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FORMATION OF HF-MO HETEROPOLY ACID (I) IN SOLN. WAS STUDIED SPECTROPHOTOMETRICALLY. I CAN BE OBTAINED BY THE INTERACTION OF AMMONIUM FLUOROHAFNATE AND AMMONIUM MOLYBDATE AND BY THE INTERACTION OF HF SULFATE AND NA MOLYBDATE. WHEN THE COMPLEX IS FORMED FROM AMMONIUM FLUOROHAFNATE OPTIMUM CONDITIONS EXIST AT A 14 FOLD EXCESS OF AMMONIUM MOLYBDATE AT PH 0.8; 0.4 ML H SUB3 BO SUB3 COMPLEXIZE F IONS. ABSORPTION SPECTRA OF COLORLESS I HAVE NO MAX ABSORBANCE AND DO NOT DIFFER FROM ACID MOLYBDATES. I IS MOST STABLE IN SMALLER THAN OR EQUAL TO 1.5N H SUB2 SO SUB4 AND LEAST IN LARGER THAN OR EQUAL TO 2N HCLO SUB4. DURING REDN. WITH SNCL SUB2 AND ASCORBIC ACID, BLUE PRODUCTS ARE FORMED WITH MAX. ABSORBANCE AT 800 NM. WHEN THE COMPLEX IS FORMED FROM SULFATE COMPLEXES THE OPTIMUM CONDITIONS ARE PH 1.0-1.5 AND A 200-300 FOLD EXCESS OF MOLYBDATE. ABSORPTION SPECTRA IN THE UV REGION COINCIDE WITH THOSE OF ACID MOLYBDATES WITH MAX. ABSORBANCE AT 245 NM. THESE COMPLEXES ARE REDUCED WITH ASCORBIC ACID, OXALATES AND SNCL SUB2 AS WELL AS BY METALLIC MO; REDUCED I IS WELL EXTD. BY O CONTG. EXTRANTS AND THEIR MIXTS. WITH C SUB6 H SUB6. HF REACTS WITH MO IN THE SATD. COMPLEX IN A 1:12 MOLAR RATIO.

FACILITY: MOSCOW STATE UNIV., MOSCOW, USSR.

UNCLASSIFIED

USSR

4

UDC 537.1.074

GAL'CHINETSKIY, L.P., KOSHKIN, V.M., KULAKOV, V.M., KULIK, V.N., RUDENKO, M.I., RYABMA, P.M., ULMANIS, U.A., SHAKHOVTSOV, V.I.

"Study Of The Possibility Of Use Of Type In_2Te_3 Semiconductors As Detectors Of Reactor Radiation"

V sb. Metrol.neytron.izlucheniya na reaktorakh i uskoritelyakh (Metrology Of Neutron Radiation At Reactors And Accelerators--Collection Of Works), Moscow, 1971, p 56 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2B275)

Translation: During irradiation of $A^{III}B^{VI}$ compounds of the In_2Te_3 type by fast neutrons with fluxes up to 5×10^{16} cm^{-2}, electrons with an energy of 100 Mev with fluxes up to 10^{19} cm^{-2}, and gamma quanta with an energy of 1.2 Mev with fluxes up to 10^{18} cm^{-2}, a marked radiation sensitivity is discovered. An irreversible change of the electrophysical properties after irradiation is not established. The possibility is studied of the use of these materials as the basis for radiation-resistant detectors. A.M.

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USSR

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GAL'CHINETSKIY, L. P., KOSHKIN, V. M., KUMAKOV, V. M., KULIK, V. N., RUDENKO, M. I., RYABKA, P. M., ULMANIS, U. A., SHAKHOVTSOV, V. I., and SHINDICH, V. L.

"Radiation Stability Effect in Semiconductors With Stoichiometric Vacancies"

Leningrad, Fizika Tverdogo Tela, vol 14, No 2, 1972, pp 646-648

Abstract: Because such lattice defects as impurity atoms have no effect on the electrical characteristics of semiconductors of the $A^{III}_2B^{VI}_3$ type, such as In_2Te_3, Ga_2Te_3, and Ga_2Se_3, the authors were led to the assumption that irradiation of these crystals by high-energy particles would have little effect on their electrical characteristics as well. To test this assumption, they subjected crystals of In_2Te_3 and Ga_2Te_3 to irradiation by gamma quanta, fast electrons, and fast neutrons in a pulse reactor, as well as by mixed reactor radiation. Tables of the characteristics of these crystals before and after the irradiation are presented. The authors of this brief communication thank V. S. Vavilov and V. L. Vinetskiy for their helpful discussions of the results.

1/1

USSR

UDC 669.712

YEFIMOVSKAYA, T. V., LANIN, A. A., SHERMAZANYAN, YA. T., SHAKHPARPNYAN, V. V., SHEKOYAN, M. G., and SMOKOVDINA, G. S., All-Union Order of the Labor Red Banner Scientific Research, Planning, Design, and Technological Institute of Sources of Current (VNIIT)

"Utilization of a High-Temperature Solar Installation for the Study of High-Melting Materials in an Oxidizing Medium (on the Basis of the Example of beta-Alumina)"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR, Seriya Tekhnicheskikh Nauk, Vol 26, No 4, 1973, pp 3-7

Abstract: Experimental research has been conducted by the Armenian Department of the VNIIT in Yerevan, on the thermal dissociation of sodium and potassium beta-alumina in a high-temperature solar heating installation for the purpose of obtaining a solid electrolyte. Results of this research have demonstrated considerable stability of the beta-alumina under conditions of radiant heating in air: beta-alumina does not dissociate completely with an exposure of up to 30 minutes at the melting point (2,000-2050°C. Sodium beta-alumina is considerably less subject to dissociation than is potassium beta-aluminum. 1 figure. 1 table. 2 references.

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USSR

SHAKHPARONOV, M. I.

UDC 535

"Fundamental Questions of the Practice and Theory of Rayleigh Scattering of Light in Liquids"

V sb. Sovrem. probl. fiz. khimii (Modern Problems of Chemical Physics -- Collection of Works), Vol. 5, Moscow, Moscow University, 1970, pp 3-80 (from RZh-Fizika, No 7, Jul 71, Abstract No 7D913)

Translation: A survey paper was presented giving basic disucssion of "high" and "low" values of the absolute scattering coefficient of light in benzene and other liquids. Conclusions: the "high" values are valid. The "low" values are caused by rough errors and incorrectness of experiments. The Lorentz field is always valid within the limits of the experimental errors. A method is proposed for calculating the anisotropy of the correcting errors in formulas obtained by the majority of other authors. 175 ref. V. Z.

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USSR

SHAKHPARONOV, M. I., AKISHIN, P. A. UDC 535

"Problems in Molecular Optics"

Voprosy molekulyarnoy optiki. Sovrem. probl. fiz. khimii, 5 (cf. English above, Modern Problems in Chemical Physics, 5), Moscow, Moscow University, 1970, 487 pp, ill., 2 r., 2 k (from RZh-Fizika, No 7, Jul 71, Abstract No 7D912K)

Translation: Papers, discussions on them, and resolutions are published in the collection that were made at the symposium "Rayleigh Scattering of Light and the Structure of Fluids" (29-31 January 1968; Chemistry Faculty of Moscow State University). Contents: general problems (5 papers); spectrum of a Rayleigh line (9 papers); scattering of light in the neighborhood of the critical point (7 papers); miscellaneous (2 papers).

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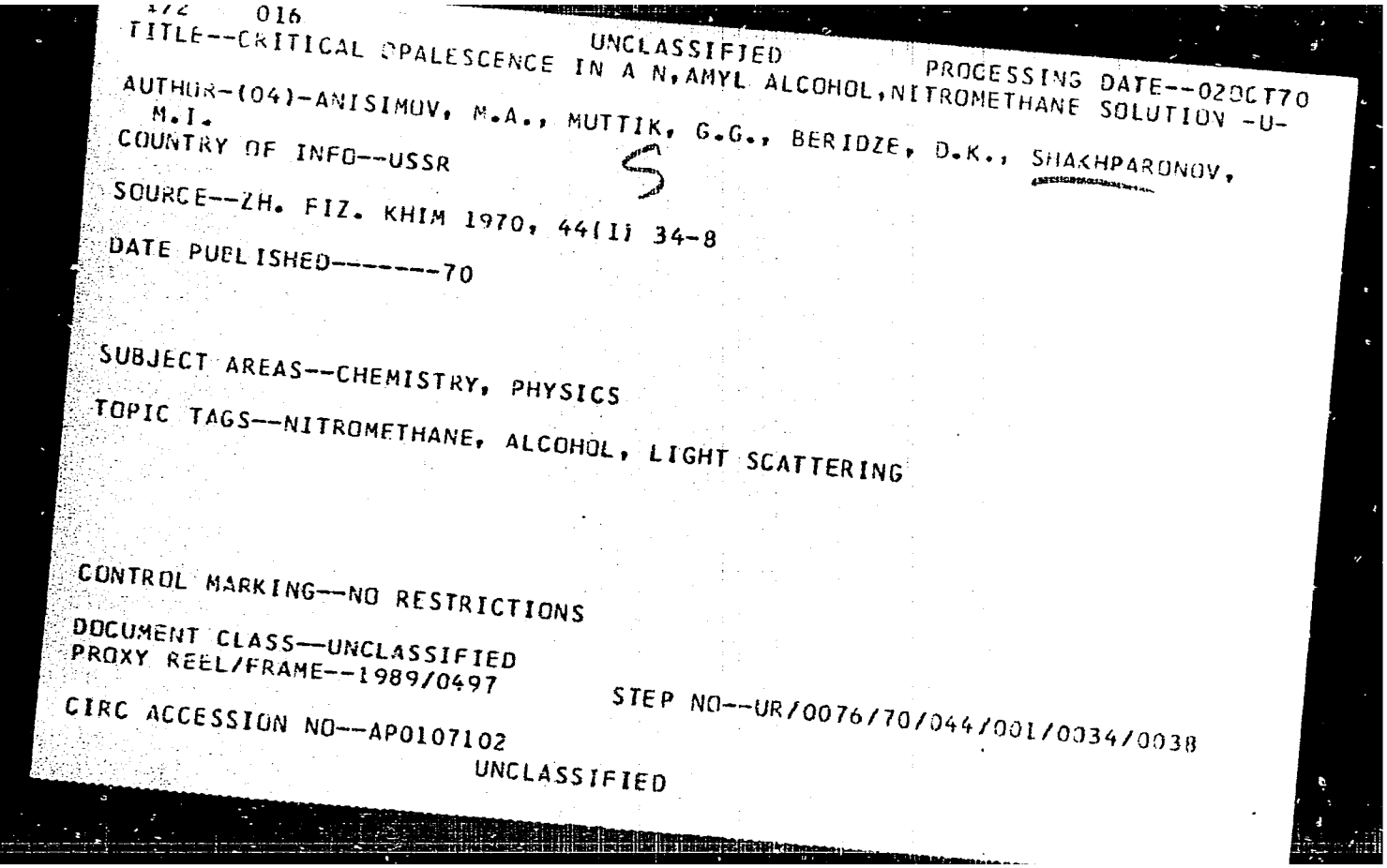

1/2 016 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--CRITICAL OPALESCENCE IN A N,AMYL ALCOHOL,NITROMETHANE SOLUTION -U-

AUTHOR-(04)-ANISIMOV, M.A., MUTTIK, G.G., BERIDZE, D.K., SHAKHPARONOV, M.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM 1970, 44(1) 34-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--NITROMETHANE, ALCOHOL, LIGHT SCATTERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0497 STEP NO--UR/0076/70/044/001/0034/0038

CIRC ACCESSION NO--AP0107102

UNCLASSIFIED

2/2 016 UNCLASSIFIED

CIRC ACCESSION NO--AP0107102 PROCESSING DATE--020CT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LIGHT SCATTERING WAS STUDIED OF THE SYSTEM C SUB5 H SUB11 OHMENO SUB2 IN THE VICINITY OF THE CRIT. POINT WITH INCIDENT LIGHT OF 4050, 4360, 5460, AND 5780 ANGSTROM. THE RELATIVE SCATTERING INTENSITY AND THE DEGREE OF DEPOLARIZATION ARE STUDIED WITH 14 SCATTERING ANGLES BETWEEN 30 AND 140DEGREES. BECAUSE OF ALMOST IDENTICAL NS OF THE COMPONENTS, THE CRIT. OPALESCENCE IS NOT VERY STRONG, AND MULTIPLE SCATTERING DOES NOT INTEFERE WITH THE MEASUREMENTS. THE THERMOSTATING WAS REALIZED WITH AN ACCURACY OF PLUS OR MINUS 5 TIMES 10 PRIME NEGATIVE4 DEGREES.

UNCLASSIFIED

USSR

UDC: 681.34

AVROV, O. M., GOLENDBERG, N. A., KUTSITSKIY, V. G., MIRZOYEV, G. A., MOZZHUKHIN, M. S., POKROVSKIY, V. S., SHAKHPAZOV, S. Kh.

"A Device for Combining the Readings of a Multichannel Angle-Phase-Code Converter"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 4, Feb 71, Author's Certificate No 292182, Division G, filed 11 Aug 69, published 6 Jan 71, p 137

Translation: This Author's Certificate introduces a device for combining the readings of a multichannel angle-phase-code converter which contains charging elements, series-connected switches, combining circuits and flip-flops. As a distinguishing feature of the patent, conversion time is reduced by connecting the output of the coarse reading channel of the converter to the input of the chief readout switch, the second input of this switch being connected to the output of the chief readout flip-flop. The switch output is connected to the input of the first delay element and to the second input of the control flip-flop. The output of the channel for the least significant reading of the converter is connected to the second input of the chief readout flip-flop. The first input of this flip-flop is connected to the first input of the control flip-flop and to the output of the control switch, and the second input of the control switch is connected to the output of the control flip-flop.

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USSR

UDC 622.24.054.322:622.24.051.64

KHUBOV, A. N., VOSKANOV, T. G., GEVORKOV, G. S., KARAYEV, S. K., MDIVANI, A. G., SIMONYAN, A. A., SHAKHRAMANOV, A. Kh., Baku Division of the All-Union Scientific Research Institute for Drilling Techniques, All-Union Scientific Research Institute for Drilling Techniques and "Kaspmorneft'" Combine

"Effectiveness of Applying Slow-Speed Turbodrills in Drilling With Diamond Chisels"

Dzerzhinsk, Bureniye, No. 4, 1972, pp 3-7

Abstract: The results of experimental boring with diamond chisels of diameter 241 mm in combination with slow-speed and high-revolution turbodrills when approximately the same power is supplied to the chisel are analyzed. It is shown that the highest economic and technical operating indices for diamond chisels are achieved by applying a slow-speed low-pressure turbine of precision casting, namely the 3TSSh-190TL turbodrill and the 33/11 turbine. This turbine can operate consistently at revolutions of 250-400 per minute and can take axial loads of 12 tons or more. Data are presented on the consumption of DRS241S2 diamond chisels, the nature of their wear, and the change in mechanical rate during drilling. It is shown that a

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202830010-3"

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(3)

KHUBOV, A. N., et al, Bureniye, No. 4, 1972, pp 3-7

decrease in the number of revolutions to 300-400 per minute had a favorable effect on the wear and an increase in cutting capacity by a factor of 2 is achieved at the same mechanical rate.

Titanium

USSR

UDC 669.295

DENISOV, S. I., BLINOV, B. S., SHAKHRAY, I. M., and TITOMER, B. P.

"Magnetic Separation of Titanium Slag"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya Publishing House, Vol 6, 1970, pp 7-12

Translation: An industrial electromagnetic separator was used in a study of conditions for separating crushed titanium slag as a function of the magnetic induction of the electromagnet, the magnitude of the slag particles, and the height of the layer. It is shown that, under optimal conditions for separating slag, it is possible to remove 70-80% of all metallic iron from it into the magnetic fraction and to obtain slag with a metal content of not more than 0.4-0.5 %. The expediency is shown of separating large slag parts (of a class greater than two millimeters), in which most of the metallic iron is concentrated independently. Two illustrations, three tables, and four bibliographic entries.

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USSR UDC: [537.226+537.311.33]: [539.3+536.21+536.631+536.651]

KAMILOV, I. K., ALIYEV, Kh. K., and SHAKHSHAYEV, G. Sh.

"Free Path Length of Phonons in Solids (Magnetite)"

Sb. nauchn. soobshch. Dagestan. un-t po vestestv. i tekhn. n. (Scientific Reports, Daghestan University of Natural and Technical Sciences--collection of works) 1970, Part 1, pp 55-61 (from RZh-Fizika, No. 11, 1971, Abstract No. 11E820)

Translation: The average free path length of phonons is determined for magnetite from the expression $\lambda = 1/3C \cdot \langle v \rangle \cdot \langle l \rangle$. The thermal conductivity λ and the thermal capacitance C_v are experimentally determined, while $\langle v \rangle$ is found by averaging $3\langle v \rangle^{-3} = v_l^{-3} + 2v_t^{-3}$. Comparison is made with the results obtained from the Leibfried-Schleeman formula for computing three-phonon collisions. It is concluded that the important role in magnetite is played by other dispersion mechanisms producing the small quantity l (of the order of the lattice constant).

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USSR

UDC: 621.396.66.018.4.001.5

VOROB'YEV, B. F., SHAKHTARIN, B. I.

"Experimental Study of a Stochastic Phase AFC System"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 4, Apr 72, pp 758-766

Abstract: The paper gives an analysis of the results of an experimental investigation of the statistical characteristics of a phase AFC system. A description is given of the experimental set-up used to determine the probability density function of the error signal and the average time to synchronization cut-off in first, second and third order systems. It is shown that conventional analytical descriptions of the distribution laws are only approximations. Experimental expressions are also found for the time to departure from the intervals $(-\pi/2, \pi/2)$, $(-\pi, \pi)$ in first, second and third order systems. It is shown that conventional formulas for these statistical characteristics are asymptotic.

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USSR

UDC: 621.396.66.018.4.001.5

SHAKHTARIN, B. I.

"Investigation of the Dynamics of Phase AFC by the Averaging Method"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 4, Apr 72, pp 747-757

Abstract: The method of averaging is used to study the dynamics of a second-order phase AFC system. The time of the transient process is found for various phase detector characteristics. Equations are derived for the critical value of the constant energy corresponding to the lock-in band in the case of sinusoidal and square-wave phase detector characteristics. An investigation is made of forced oscillations of a nonlinear system when a proportionally integrating filter is present.

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1/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--SIGNAL PICKUP BY THE FAPCH SYSTEM DURING FREQUENCY SCAN -U-

AUTHOR-(02)-SHISHKIN, V.I., SHAKHTARIN, B.I.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA, NO 1, 1970, PP 74-79

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., NAVIGATION

TOPIC TAGS--SIGNAL RECEPTION, FREQUENCY SCANNING, PHASE DETECTOR/(U)FAPCH SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1356 STEP NO--UR/0108/70/000/001/0074/0079

CIRC ACCESSION NO--AP0123314

UNCLASSIFIED

2/2 023 UNCLASSIFIED

CIRC ACCESSION NO--AP0123314 PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RELATIONSHIPS ARE DERIVED FOR PICKUP PROBABILITY AS A FUNCTION OF SCANNING RATE AND THE PARAMETER VALUES OF THE SYSTEM. THE EFFECT OF PHASE DETECTOR CHARACTERISTIC ON PROBABILITY OF PICKUP IS ANALYZED. ORIGINAL ARTICLE: SIX ILLUSTRATIONS AND EIGHT BIBLIOGRAPHIC ENTRIES.

UNCLASSIFIED

USSR

UDC 621.315.55:537.312.62

KOKHANOVSKIY, S.M., NOVITSKIY, V.G., SHAKHTARIN, V.N.

"Test Of Planning And Creation Of Superconducting Solenoids"

V sb. Vopr. primeneniya sverkhnizk. temperatur v elektrotekhn. (Problems Of The Use Of Ultralow Temperatures In Electrical Engineering--Collection Of Works), Leningrad, "Nauka," 1971, pp 74-90 (from RZh:Elektrotekhnika i energetika, No 6, June 1972, Abstract No 6B69)

Translation: An account is given of a method of calculation and designing, and the results of a test of superconducting solenoids with a magnetic field intensity from 10 to 70 k-oersted for physical experiments. The interior diameter and the magnetic field intensity at the geometrical center of the superconducting solenoids were taken as the initial data. Calculated curves are presented of the dependence of the masses of the superconducting materials of the superconducting solenoids on the current density in the super conductor. Also presented are various configurations of the superconducting solenoids with an increased uniformity of the magnetic field attained because of the exclusion of a part of the turns of the winding. The distinctive features of the technology of the production of superconducting solenoids are described and the principal data on 30 completed superconducting solenoids are presented. 13 ill. 2 tab. 4 ref. Ye.V.Granovskiy.

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USSR

UDC: [621.313.322-81:537.312.62]001.24

BORZOV, G. G., GLEBOV, I. A., GNEDIN, L. P., DOMBROVSKIY, V. V., NOVITSKIY, V. G., SHAKHTARIN, V. N., Leningrad

"Problems in the Development of High-Power Turbogenerators With Superconductive Field Windings"

Moscow, Izv. AN SSSR: Energetika i Transport, No 4, Jul/Aug 72, pp 21-28

Abstract: The authors point out the advantages of cryogenic turbogenerators over conventional units. Elements of construction of high powered cryogenic turbogenerators are described, and the results of model tests are presented. The analysis shows that using superconductors in the field windings increases the unit power of turbogenerators by an order of magnitude. The results of experimental studies confirm the feasibility of a synchronous machine with rotating cryostat that has low liquid helium evaporability and provides torque transfer. The realization of high-power cryogenic turbogenerators must wait for a great deal of research on development of new materials, structural and refrigeration units, and automatic monitoring and control systems.

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USSR

UDC: 537.312.62:538.31.001.24

NOVITSKIY, V. G., SHAKHTARIN, V. N., Leningrad

"Electrodynamic Forces and Mechanical Stresses in Superconducting Magnetic Systems"

Moscow, Izv. AN SSSR:Energetika i Transport, No 4, Jul/Aug 72, pp 50-55

Abstract: A method is proposed for calculating mechanical stresses in a superconducting solenoid as a cylindrically anisotropic body in the presence of a radial body force which depends on the radius. The method accounts for the elastic constants of the material of the winding and the banding. Formulas are presented for calculating the moduli of elasticity and the Poisson ratios of a ribbon solenoid whose winding is made up of a superconductor, a stabilizing material and insulation. Expressions are also given for determining the electrodynamic forces between two circular coils for various relative positions. A stricter solution of the problem of finding mechanical stresses in a winding should take account of the axial component of the electrodynamic force acting on the conductors of the winding.

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USSR

UDC 621.311.6

BORZOV, G. G., and SHAKHTARIN, V. N.

"Power Supply for Superconducting Magnetic Systems"

V sb. Nekotoryye vopr. issled. gazorazryach. plasmy i sozdaniya sil'nykh magnitn. poley (Some Problems of the Study of Gas-Discharge Plasma and the Creation of Strong Magnetic Fields -- collection of works), Leningrad, "Nauka," 1970, pp 148-153 (from RZh--Elektronika i yeye primeneniye, No 5, May 1971, Abstract No 5B499)

Translation: Some circuits for the power supply of superconducting magnetic systems are considered. As a function of the goal and the operating conditions, it is recommended that storage batteries, connected through a transistor, multiphase rectifiers, thermogenerators, and induction power supplies be used. 3 ill. 7 ref.

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USSR

SHAKHUNOVA, A. P.

S

UDC 669.295

"Method of Increasing the Quality of Titanium Sponge Produced in a New Reactor"

Moscow, Tsvetnyye Metally, No 1, Jan 70, pp 61-62

Abstract: A description is given of a method for the thermodiffusion Ti coating of the internal surface of a reactor made of stainless steel. The method was developed and tested under industrial conditions in a Ti reduction and distillation shop.

1/2 017 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--INCREASES QUALITY OF TITANIUM SPONGE PREPARED IN A NEW REACTOR -U-

AUTHOR--SHAKHUNOVA, A.P.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(1), 61-2

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--PHYSICAL DIFFUSION, IRON, SPONGE TITANIUM, QUALITY CONTROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0746 STEP NO--UR/0136/70/043/001/0061/0062

CIRC ACCESSION NO--AP0107288

UNCLASSIFIED

2/2 017 UNCLASSIFIED

CIRC ACCESSION NO--AP0107288 PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ONE OF THE FACTORS WORSENING THE QUALITY OF TI SPONGE AND ALSO IT HETEROGENEITY HAS BEEN THE INTRODUCTION OF NEW REACTORS. THE FE PRESENT IN STEEL PASSES INTO THE TI AND THEREBY WORSENS ITS MECH. AND OTHER PROPERTIES; I.E. MUTUAL DIFFUSION TAKES PLACE AT THE START OF THE TI PREPN. PROCESS. THE TI SPONGE BLOCK THUS IS COATED WITH A FERROUS SLURRY, AND THIS HAS TO BE REMOVED BEFORE FURTHER PROCESSING CAN TAKE PLACE. DURING THIS PURIFICATION PROCESS, A CERTAIN AMT. OF THE SPONGE IS ALSO REMOVED, THEREBY DECREASING THE YIELD TO TI SPONGE. DURING THE SUBSEQUENT PROCESSES, THE RETORTS ARE SATD. WITH TI AND THE TRANSITION OF FE INTO TI SPONGE BECOMES LESS AND LESS FROM PROCESS TO PROCESS. THE BEST RESULTS WERE OBTAINED ON DIRECT THERMODIFFUSIVE APPLICATION OF A TI LAYER ON THE INTERNAL SURFACE OF THE RETORT. OTHER IMPROVEMENTS ARE DISCUSSED.

UNCLASSIFIED

USSR

UDC 536.2.08

NAPR'IN, Yu. A., SHAKHURDIN, V. I.

"Use of the Schlieren Method to Study the Temperature Fields in a Solid"

Minsk, Inzhenerno-Fizicheskiy Zhurnal, Vol. 20, No. 3, Mar. 71, p. 510-514.

Abstract: The application of the Schlieren method for measurement of the temperature field and gradients in a solid is studied; the field and gradients are compared with a theoretical calculation of the temperature field in a finite cylinder with second and third order boundary conditions.

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UDC: 517.512.6

USSR

IBRAGIMOV, I. I., Academician of the Azerbaijan Academy of Sciences, GADZHIYEV, A. D., and SHAKHVERDIYEV, V. M.

"Monotonicity Conditions of a Sequency of Derivatives of the Gel'fand-Bernshteyn Polynomials"

Moscow, Doklady Akademii Nauk SSSR, vol. 199, No. 4, 1971, pp 762-765

Abstract: The authors note that by successfully determining the monotonicity of a sequence of derivatives of the generalized polynomials of A. O. Gel'fand and S. N. Bernshteyn, the results can be applied to problems involving the numerical integration of differential equations. They begin their investigation by offering and proving a basic theorem for the difference between the derivatives of two successive polynomials in the sequence, which enables them to establish its monotonicity. Their notation for the sequence of derivatives is $\{r_n'(f;x)\}$. They also derive corollaries of this theorem regarding the convergence properties of the sequence and an alternate method for expressing the difference between two successive derivatives in it. The authors are members of the Institute of Mathematics and Mechanics in Baku.

1/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--OPTICAL ACTIVITY OF KYURSANGE PETROLEUMS -U-

AUTHOR-(04)-SHAKHVEROIYEV, YA.KH., SATTARZADE, I.S., GASPARYAN, N.G., SATTARZADE, A.D.

COUNTRY OF INFO--USSR

SOURCE--AZERB. NEFT. KHOZ. 1970, (1), 39-41

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--OPTIC PROPERTY, PETROLEUM DEPOSIT, GEOGRAPHIC LOCATION, AROMATIC HYDROCARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1128 STEP NO--UR/0487/70/000/001/0039/0041

CIRC ACCESSION NO--AP0128555

UNCLASSIFIED

2/2 014 UNCLASSIFIED

CIRC ACCESSION NO--AP0128555 PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SP. OPTICAL ROTATION (ALPHA) D OF PETROLEUM FROM A MULTISTRATAL KYURSANGE SAND GRAVEL FORMATION DECREASED FROM PLUS 0.63 TO PLUS 0.53 FROM THE UPPER TO THE LOWER STRATA. WITH INCREASING B.P. OF FRACTIONS B. 60-95, 95-122, 122-50, 150-75, 175-200, 200-25, 225-250, 250-300, 300-50, 350-400, 400-450, AND 450-500DEGREES, (ALPHA) D CHANGED FROM 0.0 TO MINUS 0.04, MINUS 0.05, MINUS 0.03, MINUS 0.08, MINUS 0.09, MINUS 0.03, 0.00, PLUS 0.12, PLUS 0.57, PLUS 0.90, AND PLUS 2.63 FOR THE UPPER STRATA AND FROM 0.0 TO 0.0, PLUS 0.07, 0.00, MINUS 0.08, 0.06, PLUS 0.00, 0.00, PLUS 0.40, AND PLUS 0.55, PLUS 1.26, AND PLUS 3.09. AFTER SULFONATION, (ALPHA) D VALUES WERE LOWER, REFLECTING OPTICAL ACTIVITY IN THE AROMATIC HYDROCARBONS. THE VARIATION IN THE PARAFFINIC HYDROCARBON INDEXES J SUBAV (30.1 AND 35.9 FOR THE UPPER AND 29.4 AND 35.8 FOR THELOWER STRATA) FOR THE 60-500 AND 300-500DEGREES FRACTIONS AND IN THE AV. NO. OF NAPHTHENIC RINGS-MOL. (1.15, 1.74, 1.79, AND 3.60 FOR THE UPPER AND 1.24, 1.39, 1.65, AND 3.13 FOR THE LOWER STRAT) FOR THE 300-50, 350-400, 400-50, AND 450-500DEGREES FRACTIONS CORRELATED WELL WITH THE CHANGE IN (ALPHA) D.

UNCLASSIFIED

USSR

UDC 535.373.2

SHAKHVERDOV, T. A., YERMOLAYEV, V. L.

"Nonradiative Energy Transfer From Rare Earth Ions to Dyes. II. Liquid Solutions"

Leningrad, Optika i Spektroskopiya, Vol 33, No 5, Nov 72, pp 941-949

Abstract: In their previous paper (Opt. i Spektr., v. 30, p 648, 1971) the authors investigated quenching of luminescence of rare earth ions by dyes in solid solutions at 77°K. It was shown that quenching is due to inductive resonance energy transfer with a critical distance (R_0) corresponding to 500-700 nm. It was also noted that the effectiveness of this type of energy transfer increases considerably in liquid solutions. In this second part of their work, the authors study quenching of luminescence of $Tb(Sal)_3$ and $Tb(NO_3)_3$ ($^5D_4 \rightarrow {}^7F_J$) in methanol by organic dyes at room temperature. Quenching constants (k_q) are determined. It is shown that quenching is due to nonradiative inductive resonance energy transfer from the stimulated Tb^{3+} to these dyes. The values of k_q are compared with the constants calculated by formulas derived by Galanin-Frank, Tunitskiy-Bagdasar'yan, and Rozman in which the influence of diffusion on energy transfer is taken into account.

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USSR

PINSKER, I. Sh., SHAKIN, V. V.

"Integral Superimposition of Figures as a Method of Pattern Recognition"

Probl. Peredachi Inform. [Problems on Information Transmission], 1972, Vol 8, No 4, pp 82-87 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V699, by the authors).

Translation: An approach is developed to pattern recognition, based on the idea of superimposition of entire images being compared. The presentation is performed for the case when the images (absolute descriptions) of the objects analyzed are lines (or vector functions of a scalar argument) in a finite-dimensional space.

1/2 022 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--AN EXPERIMENTAL STUDY OF THE ORTHOGONAL VECTORCARDIOGRAPHIC SYSTEM SVEC-III WITH A SIMPLIFIED Z LEAD -U-

AUTHOR-(02)-TITOMIR, L.I., SHAKIN, V.V.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDISTINY, 1970, VOL 49, NR 6, PP 13-20

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ELECTROCARDIOGRAPHY, VECTORCARDIOGRAPHY, MATHEMATIC ANALYSIS, ALGORITHM, DIGITAL COMPUTER APPLICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0702 STEP NO--UR/0219/70/049/006/0013/0020

CIRC ACCESSION NO--AP0153301

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0131301

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SCALAR ELECTROCARDIOGRAMS AND VECTORCARDIOGRAPHIC LOOPS (FOR THE QRS COMPLEX) RECORDED FROM 40 NORMAL MEN AND PATIENTS USING THE CORRECTED ORTHOGONAL LEAD SYSTEM SVEC-III ARE COMPARED WITH THE ANALOGOUS CURVES RECORDED USING THE SAME LEAD SYSTEM WITH A SIMPLIFIED Z LEAD THAT INCLUDES A SINGLE DORSAL ELECTRODE INSTEAD OF FOUR. THE DISCREPANCY BETWEEN THE CURVES WAS ESTIMATED VISUALLY AND ON THE DIGITAL COMPUTER BY MEANS OF AN ALGORHYTHM ALLOWING TO EXCLUDE THE BASIC ERRORS OF MEASUREMENTS. THE CURVES ARE FOUND TO DIFFER INSIGNIFICANTLY SO THAT THE MEASURING FEATURES AND DIAGNOSTIC CRITERIA OF THE SVEC-III SYSTEM ARE PRESERVED IN ITS PROPOSED MODIFIED VERSION BEING AT THE SAME TIME SIMPLER AND MORE CONVENIENT IN PRACTICE. FACILITY: FIZIOLOGICHESKAYA LABORATORIYA, INSTITUTA KHIRURGII IM. A. V. VISHNEVSKOGO AMN SSSR. FACILITY: VYCHISLITEL'NAYA LABORATORIYA, INSTITUTA PROBLEM PEREDACHI INFORMATSII AN SSSR, MOSKVA.

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1/2 022 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--ON THE POTENTIAL INFORMATIVENESS OF ELECTROCARDIOGRAMS -U-

AUTHOR-(03)-PINSKER, I.SH., SHAKIN, V.V., GUREVICH, L.S.

COUNTRY OF INFO--USSR

SOURCE--EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA, 1970, NR 2, PP 12-18

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ELECTROCARDIOGRAPHY, HEART DISEASE, DIAGNOSTIC MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/0641 STEP NO--UR/0481/70/000/002/0012/0018

CIRC ACCESSION NO--AP0108852

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202830010-3"

2/2 022 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0108852
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TASK OF PRELIMINARY ANALYSIS OF THE DIAGNOSTIC VALUE OF ELECTROCARDIOGRAMS IS DISCUSSED. A METHOD OF SINGLING OUT FROM ANY NEW (ADDITIONAL) ELECTROCARDIOGRAM OF ALL THE PARAMETERS, WHICH MAY CONTAIN DIAGNOSTIC INFORMATION, HAS BEEN ELABORATED. THE AUTHORS PROPOSE AN OPTIMAL, ECONOMIC AND PHYSICALLY SUBSTANTIATED SYSTEM OF REGISTRATION AND TREATMENT OF ELECTROCARDIOGRAMS. FACILITY: INSTITUT PROBLEM PEREDACHI INFORMATSII AN SSSR, MOSCOW.

UNCLASSIFIED

USSR

PINSKER, I. Sh., TRUNOV, V. G., SHAKIN, V. V.

"Recognition of Manuscript Characters which can be Parametrized"

Opoznavaniye i Opisaniye Liniy [Recognition and Description of Lines -- Collection of Works], Moscow, Nauka Press, 1972, pp 101-107 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V714 by the authors).

Translation: An approach is suggested and described for recognition of manuscript characters (numerals) which are studied as lines on a plane, represented in parametric form with a natural parameter. This representation allows the problem of synthesis of spatial standards for manuscript characters to be solved. A simple generator is suggested, the use of which allows significant reduction in the preparatory portion of the experiment, related to coding and input of information to a computer.

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USSR

SHAKIN, V. V.

"Simple Algorithms for Classification of Lines"

Opoznavaniye i Opisaniye Liniy [Recognition and Description of Lines -- Collection of Works], Moscow, Nauka Press, 1972, pp 40-46 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V706 by the author).

Translation: Algorithms are suggested for classification of lines in a finite-dimensional space by their affine imposition using integral criteria.

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USSR

SHAKIN, V. V.

"Computer Procedures for Regonition of Vector Functions"

Opoznavaniye i Opisaniye Liniy [Recognition and Description of Lines -- Collection of Works], Moscow, Nauka Press, 1972, pp 58-77 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V716).

Translation: The procedures mentioned are studied in the framework of a certain rather general recognition plan. It utilizes operators of preliminary conversion and economical approximate description both of the learning sample as a whole, and of its parts related to various classes. The plan contains certain known recognition algorithms as particular cases. Furthermore, it can be used to find new additional capabilities, particularly using a procedure for balancing of data matrices, related to selection of metrics in the space of vector functions. 37 Biblio. Refs.

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USSR

PINSKER, I. Sh., TSUKERMAN, B. M., SHAKIN, V. V.

"Diagnostic Classification of Electrocardiograms as Vector Functions"

Opoznavaniye i Opisaniye Liniy [Recognition and Description of Lines -- Collection of Works], Moscow, Nauka Press, 1972, pp 47-57 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V712 by the authors).

Translation: The expediency is demonstrated of recognizing electrocardiograms as vector functions using the method developed, and experimental results of EKG diagnosis of myocardial infarct are presented.

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USSR

PINSKER, I. Sh., SHAKIN, V. V.

"Method of Local Expansions"

Opoznavaniye i Opisaniye Liniy [Recognition and Description of Lines -- Collection of Works], Moscow, Nauka Press, 1972, pp 30-39 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V709).

Translation: Certain facts are presented, related to the formal apparatus of the method of local expansions, which utilizes and generalizes certain properties of the Taylor expansion at a point and linear approximation in a sector. The method is used in the practice of recognition of objects described using vector functions of a scalar argument. 11 Biblio. Refs.

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UDC 62-507

USSR

PINSKER, I. Sh., and ShAKIN, V. V.

"Total Superimposition as a Method of Pattern Recognition"

Moscow, Problemy Peredachi Informatsii, Vol 8, No 4, 1972, pp 82-87

Abstract: The most common approach to pattern recognition involves partitioning the image space by the use of various descriptors until a pattern can be recognized by assigning it to a unique cell in the partitioned space. The process of developing descriptors is largely intuitive or heuristic. An alternative approach involves superimposing the pattern to be recognized over various standard patterns in an attempt to develop an identical match. This approach encounters complexities in allowing for distortions. Rozenblat suggested the use of perceptrons to overcome this difficulty, but the limited capacities of the perceptron make this unsatisfactory. V. S. Fine has used a computational system starting from the coincidence of singular points, but only linear (affine) transformations are considered, limiting the possibilities.

The method described in this article involves extending the continuous group of affine transformations of the plane to a semigroup of linear transformations of multi-dimensional space and abandoning the limitation to singular

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PINSKER, I. Sh., et al., Moscow, Problemy Peredachi Informatsii, Vol 8, No. 4 1972, pp 82-87

points only and finding parameters of transformation. Images are superimposed and their similarity evaluated using an integral functional which determines the distance between them.

The method is applied to 1-dimensional geometric variations such as oscilloscope traces, hand-writing, electrocardiograph recordings, etc. In analysis of electrocardiograms for myocardial infarct the method proved superior to the use of discriminant functions and gaussian approximation of distribution into classes and as good as the method of potential functions. In recognizing hand-written numerals input to a computer, an algorithmic method has been devised for synthesizing standards by representing the X-Y coordinates as parameters of time and projecting them on the plane until the best fit has been obtained with the number to be recognized.

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1/2 025 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--ON MESOSCALE WAVES IN JET STREAM OVER THE ROTATING EARTH -U-

AUTHOR--SHAKINA, N.P.

COUNTRY OF INFO--USSR

SOURCE--METEOROLOGIYA I GIDROLOGIYA, 1970, NR 2, PP 33-41

DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--JET STREAM, CORIOLIS FORCE, WAVE FUNCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED STEP NO--UR/0050/70/000/002/0033/0041

PROXY REEL/FRAME--1986/1222

CIRC ACCESSION NO--AP0103110 UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0103110

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A PROBLEM ON SINGULAR NEUTRAL WAVES IN JET SHAPED STREAM IN THE FIELD OF CORIOLIS FORCE IS SOLVED BY REPRESENTING AMPLITUDE FUNCTIONS AND PHASE SPEEDS IN THE FORM OF ASYMPTOTIC SERIES ACCORDING POWERS OF THE QUANTITY WHICH IS INVERSE TO SQUARE OF ROSSBY NUMBER. BY MEANS OF LIGHTHILL METHOD AN EVERYWHERE LIMITED SOLUTION IS MADE. IT IS CONCLUDED THAT CORIOLIS FORCE INSERTS ONLY LITTLE ADDITIONS TO AMPLITUDE FUNCTIONS OF WAVES UNDER CONSIDERATION.

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USSR UDC 547.26'118 + 547.292.6

GAZIZOV, M. B., SULTANOVA, D. B., RAZUMOV, A. I., OSTANINA, L. P., SHAKIROV, I. Kh., ZYKOVA, T. V., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Reaction of Dialkyl Chlorophosphites With Acetic Acid Acylals"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 12, Dec 72, pp 2634-2638

Abstract: It was shown that alpha-chloroethers formed in the reaction of dialkyl chlorophosphites with acetic acid acylals undergo secondary reactions with dialkyl chlorophosphites forming ester-acid chlorides of α-alkoxyethylphosphonic acids. It was shown by IR spectroscopy that the ester-acid chlorides of α-alkoxyethylphosphonic acids exist in two conformations resulting from different orientation of the polar bonds P:O and C-O: conformation A with parallel (cis) or nearly parallel (gauche) orientation of P:O and C-O, and the conformation B with the antiparallel trans orientation of these bonds. Purification methods were proposed for α-chloroethers and dialkyl chlorophosphites by treatment with catechol chlorophosphite and with acetyl chloride respectively to remove the acetal and trialkyl phosphite impurities.

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USSR

UDC 532.5:532.135

ZELENKIN, V. A., SHAKIROV, N. V. [redacted]

"Application of the Laplace Transformation to the Solution of Certain Flow Problems"

Sb. nauch. tr. Perm. politekhn. in-t (Collection of Scientific Works of Perm' Polytechnical Institute), 1971, No. 98, pp 44-47 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3B984)

Translation: A homogeneous incompressible medium with the following defining equation is considered:

$$\sigma_{ij} = -p\delta_{ij} + 2\bar{\mu}e_{ij} \quad (i, j = 1, 2, 3)$$

where σ_{ij} and ε_{ij} are components of the stress and deformation temperature, respectively; δ_{ij} is the Kronecker delta; p is the average pressure and

$$\bar{\mu}f = \mu f + \mu \int_0^t f R(t-\tau)\, d\tau$$

where μ is the viscosity, $R(t)$ is a descending function of time. The problem of

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ZELENKIN, V. A., SHAKIROV, N. V., Sb. nauch. tr. Perm. politekhn. in-t, 1971, No. 98, pp 44-47

the flow between parallel walls, one of which is fixed and the other begins to move with a constant velocity is solved. $R(t) = A\lambda e^{-\lambda t}$. The problem is solved by the application of the Laplace-Carson transformation. The solution is given in the form of a series. S. A. Leybovich.

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